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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/763,247	01/26/2004	Yutaka Kashihara	248162US2SX	8010

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OBLON, SPIVAK, MCCLELLAND, MAIER & NEUSTADT, P.C.  
1940 DUKE STREET  
ALEXANDRIA, VA 22314

EXAMINER
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GUPTA, PARUL H

ART UNIT	PAPER NUMBER
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2627

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	12/27/2006	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

**Office Action Summary**

Application No.

10/763,247

Applicant(s)

KASHIHARA ET AL.

Examiner

Parul Gupta

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 26 January 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-8 and 10-16 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

### **DETAILED ACTION**

1. Claims 1-16 are pending for examination as interpreted by the examiner. The IDS filed on 1/26/04 and 2/1/06 were considered.

#### ***Claim Objections***

2. Claim 9 is objected to under 37 CFR 1.75(c) as being in improper form because a multiple dependent claim cannot depend from any other multiple dependent claim. See MPEP § 608.01(n). Accordingly, the claim has not been further treated on the merits.

#### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1-4, 6-8, 10, and 14 are rejected under 35 U.S.C. 102(e) as being anticipated by Okumura et al., US Patent Publication 2005/0193318.

Regarding claims 1, 6, 10, and 14, Okumura et al. teaches a signal evaluation method configured to evaluate a reproduction equalization signal reproduced from a recording medium and an information recording/reproducing apparatus and an information reproducing apparatus and outputting reproduction signals reproduced from a recording medium and an information recording medium from which reproduction signals, the reproduction signals being evaluated based on an evaluation value, are reproduced by use of a PRML (partial response and maximum likelihood) discrimination

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method (paragraph 0055), said method comprising: means for detecting matching between discrimination data and a plurality of predetermined bit sequence pairs of different groups (paragraph 0112); means for calculating a bit sequence (paragraph 0098) and corresponding two ideal responses (paragraph 0099) when the matching is detected; means for obtaining Euclidean distances between the two ideal responses and equalization signals (paragraphs 0099 and 101); means for obtaining a difference between the Euclidean distances (necessary to find the least distance as explained in paragraphs 0099 and 0100); means for obtaining a mean value (necessary part of comparison of paragraph 0099) and a standard deviation (can be derived from the mean square error of paragraph 0116) with respect to the difference between the Euclidean distances; and means for calculating a quality evaluation value of a reproduction signal based on the mean value, the standard deviation, an appearance probability of the predetermined bit sequence, and a Hamming distance (paragraph 0120 describes the path metric difference, which is used as the Hamming distance and paragraph 0173 further explains the state transitions) between the predetermined bit sequence pairs (same as evaluating quality as given in paragraphs 0098-0102), wherein said information recording medium satisfies a requirement that the evaluation value is not more than  $10 \times 10^{-3}$  or  $10 \times 10^{-5}$  (paragraphs 0147 and 0148).

Regarding claim 2, Okumura et al. teaches a signal evaluation method according to claim 1, wherein said quality evaluation signal is used as a first evaluation value (paragraph 0275), a target signal is calculated based on a predetermined data sequence ("specific pattern" of paragraph 0127) and a predetermined partial response

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characteristic ("partial response properties" as given in paragraph 0145), an equalization error representing a difference in reproduction equalization signals is calculated (paragraphs 0047 and 0087) in each clock period (paragraph 0097), a second evaluation value based on the autocorrelation of said equalization error is used as an evaluation value for evaluating the signal quality (paragraphs 0006 and 0043), and said first evaluation value and said second evaluation value are used in combination to obtain final evaluation (abstract).

Regarding claims 3 and 4, Okumura et al. teaches a signal evaluation method, wherein the final evaluation is made based on the first evaluation value, wherein said quality evaluation value is used as a first evaluation value (paragraph 0275), the second evaluation value (paragraphs 0006 and 0043), and a third evaluation value, the third evaluation value being provided by an error correction decoder ("Viterbi decoder") and attributable mainly to a medium defect (paragraph 0043).

Regarding claim 7, Okumura et al. teaches an apparatus according to claim 6, further comprising: means for adjusting a recording waveform by use of a value calculated based on the mean value and the standard deviation (paragraph 0264).

Regarding claim 8, Okumura et al. teaches in paragraph 0264 an apparatus used as one of an information recording/reproducing apparatus and an information reproducing apparatus and configured to produce an evaluation value by use of a signal evaluation method described in any one of claims 1, 2, 3, and 4, said apparatus comprising means for performing at least one of: adjustment of a recording waveform; an offset adjustment of a reproduction signal; gain adjustment; adjustment of an

equalization coefficient; tracking control; focusing control; tilting control; and the adjustment of a spherical aberration.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 5, 11-13, and 15-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Okumura et al.

Regarding claim 5, Okumura et al. teaches the signal evaluation method of claims 1-4 and that a large number of sample bits are required upon measurement (paragraph 0018). Okumura et al. does not specifically teach the method wherein the evaluation value is calculated by use of equalization signals corresponding to 100,000 channel bits or more. However, the large number of sample bits means that the specific number given is just an optimization of ranges for the number of bits. Since 100,000 is a large number of sample bits, it would have been obvious to one of ordinary skill in the art at the time of the invention to include the concept of the specific number of channel bits based on the teaching of Okumura et al. in order to ensure an accurate sample.

Regarding claims 11, 13, and 15, Okumura et al. teaches an information recording medium, wherein said quality evaluation signal is used as a first evaluation value (paragraph 0275), a target signal is calculated based on a predetermined data sequence ("specific pattern" of paragraph 0127) and a predetermined partial response

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characteristic ("partial response properties" as given in paragraph 0145), an equalization error representing a difference in reproduction equalization signals is calculated (paragraphs 0047 and 0087) in each clock period (paragraph 0097), a second evaluation value based on the autocorrelation of the equalization error is used as an evaluation value for evaluating the signal quality (paragraphs 0006 and 0043), and said first evaluation value and said second evaluation value are used in combination to obtain final evaluation (abstract), said information recording medium satisfying a requirement that the first evaluation value is not more than  $10 \times 10^{-3}$  or  $10 \times 10^{-5}$  (paragraphs 0147 and 0148) and the second evaluation value is not less than 12 or 15. Okumura et al. does not specifically teach the medium wherein the second evaluation value is not less than 12 or 15, but explains the benefit of having larger numbers in paragraphs 0147-0148 and explains that the value should be optimized. Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention to include the concept of the specific value based on the teaching of Okumura et al. in order to ensure an accurate sample.

Regarding claims 12 and 16, Okumura et al. teaches a recording information medium according to claims 11 and 15, respectively, wherein the final evaluation is made based on the first evaluation value, the second evaluation value and a third evaluation value (abstract), the third evaluation value being provided by an error correction decoder ("Viterbi decoder"), which performs error correction with respect to the reproduction signals, and attributable mainly to a medium defect (paragraph 0043), said information recording medium satisfying a requirement that the first evaluation

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value is not more than  $10 \times 10^{-3}$  or  $10 \times 10^{-5}$  (paragraphs 0147 and 0148), the second evaluation value is not less than 12 or 15, and the third evaluation value is not more than 280 for 8 consecutive ECC blocks (paragraph 0275 explains that the error rate as an influence of the signal quality evaluation value is several every 100 to 1000 bits, which is under the given value given the size of the block outputted by the ECC of element 123 of figure 15 as given in paragraph 0276). Okumura et al. does not specifically teach the medium wherein the second evaluation value is not less than 12 or 15, but explains the benefit of having larger numbers in paragraphs 0147-0148 and explains that the value should be optimized. Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention to include the concept of the specific value based on the teaching of Okumura et al. in order to ensure an accurate sample.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Parul Gupta whose telephone number is 571-272-5260. The examiner can normally be reached on Monday through Thursday, from 9:30 AM to 7 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bill Korzuch can be reached on 571-272-7589. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.



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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

PHG

12/20/06

  
**TAN DINH**  
**PRIMARY EXAMINER**

12/21/06